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Fall 9-1-2021

### BIOE 406.01: Behavior and Evolution

Douglas J. Emlen

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# BIOE 406 - Behavior & Evolution

## Course Information:

Instructor: Douglas Emlen

Teaching Assistant: Bridget Creel

Term: Fall 2021

Credits: 3

Location & Time: Clapp 131 TR 11:00 – 12:20

## Course Description:

This course will introduce students to the diversity of behavior exhibited by animals. Ecological factors including competition, resource distribution, predation and the physical environment all affect how animals should balance their investment in growth, survival and reproduction. This course uses evolutionary theory as an explicit and rigorous framework for studying behavior in its natural ecological contexts. The behavior expressed by an individual in a particular ecological situation is considered to influence the relative success of that individual in contributing offspring to subsequent generations (the ‘fitness’ of that individual). Natural selection, by favoring those individuals whose behavior causes them to maximize their fitness, can lead to evolutionary changes in behavior. Consequently, this course explores *why* animals behave the way they do by integrating information from evolution, ecology and ethology. Areas of emphasis include the genetics of behavior, predator avoidance, sexual selection, sperm competition, parental care, social & eusocial behavior, and speciation. Course outcomes include providing students with an introduction to the theory and methods of the study of animal behavioral ecology.

## Assessment:

Students will be assessed based on two in-class exams and a final exam.

## Grading Rubric:

### Exams:

Exam I	30%
Exam II	30%
Final	40%

## Learning Outcomes:

- Students will be fluent with core principles of evolutionary biology, including concepts of variation and selection.
- Students will have a rigorous and modern grasp of how complex traits like animal behaviors are inherited, including an appreciation for modern genetic and genomic approaches to studying the genetics of behavior.
- Students will understand the basis for sexual selection, and how this process drives spectacular diversity in animal morphology and behavior.
- Students will understand the logic behind why and when animals form cooperative groups, including the most extreme animal societies, the eusocial species.

- Students will have an appreciation for current understandings of the process of speciation, including especially the crucial role so often played by sexual selection and animal behavior.
- Students will have an appreciation for how evolution helps us understand modern public health issues, such as the origin and spread of pandemic influenza.

### **Students with Disabilities:**

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